Remarks

Claims 1-29, as amended, are pending in this case. In an Office Action mailed January 10, 2007, the Examiner rejected claims 1-5 and 7-24 under 35 U.S.C. § 102(e) as anticipated by Pub. No. 2005/0018862 to Fisher (henceforth, "Fisher"). The Examiner rejected claims 6 and 25-29 under 35 U.S.C. § 103(a) as being unpatentable over Fisher in view of web pages submitted by Applicant (henceforth, "Soundshield"). Applicant believes pending claims 1-29 are patentable and respectfully request reconsideration in light of the following remarks.

Claim 1, as amended, provides a system for preventing acoustic shock including a variable attenuator attenuating an input signal by a variable attenuation amount specified in a single attenuation value signal to produce an output signal. A frequency analyzer converts a time-windowed portion of the input signal into a plurality of frequency bins, each frequency bin expressing the energy of the time-windowed portion of the input signal over a particular frequency range. An energy calculator determines a relative energy signal having an element corresponding to each frequency bin. Each element of the relative energy signal is based on energy magnitude in the corresponding frequency bin relative to a total energy of the time-windowed portion of the input signal. A plurality of signal detectors each generate a detection signal for modifying the variable attenuation amount based on the relative energy signal. At least one of the detection signals comprising a vector of attenuation elements with each attenuation element in the vector corresponding to one of the frequency bins. Attenuation logic determines an attenuation value signal controlling the variable attenuation amount based on combining the plurality of detection signals to generate the attenuation value signal.

The Examiner rejected claim 1 as anticipated by Fisher. As seen in Fisher's Figure 3, Fisher discloses a plurality of Shriek Rejection Filters (310, 320), each responsible for reducing the effects of a single sound frequency.

> As shown in FIG. 3, the Shriek Rejecter 204 includes a shriek detector (labeled Shriek Detector) and two adaptive filters, Shriek Rejection Filter 1 and Shriek Rejection Filter 2; The Shriek Detector identifies the presence and the frequency regions of up to two shrieks simultaneously. The Shriek Detector provides two signals to each Shriek Rejection Filter, a binary signal indicating the presence or absence of a shriek,

> Shriek Present and a number representing the frequency region in which the shriek is present, Shriek Frequency. **The Shriek Detector may be configured to identify the presence and frequency region of additional shrieks and for this purpose, the Shriek Rejecter may contain additional Shriek Rejection Filters and the Shriek Detector may provide additional signals to indicate presence and frequency region of additional shrieks to the additional Shriek Rejection Filters.**
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> Each Shriek Rejection Filter provides narrow-band attenuation of the signal passing through it when its Shriek Present input is active by adaptively defining a notch filter. The centre frequency of its narrow-band attenuation is determined by the number provided to its Shriek Frequency input.

(Fisher, ¶¶ 91-92 (emphasis added).)

Fisher's shriek system includes a separate filter for each shriek frequency to be addressed. Each filter has its own, separate control signals.

In contrast to Fisher, Applicant's invention of claim 1 uses a single attenuation signal to control a single attenuator. Moreover, the single attenuation signal is produced by combining the detection signals produced by a plurality of detectors.

Fisher does not teach, or fairly suggest, Applicant's system for preventing acoustic shock as in claim 1. Claims 2-13 depend from claim 1 and are therefore also patentable.

Independent claim 14 provides a method of reducing acoustic shock. The spectrum of an input signal is obtained. The spectrum includes a plurality of frequency bins, each bin representing the magnitude of the spectrum over a particular frequency range. A relative energy signal is determined as a plurality of relative energy elements, each relative energy element representing the relative energy in a corresponding frequency bin. A difference signal is determined as a plurality of difference elements, each difference element representing a difference between a corresponding frequency bin value and an adjacent frequency bin value. A plurality of detection signals is determined, each detection signal detecting the presence of a sound element in the input signal based on at least one of the relative energy signal and the difference signal. The plurality of detection signals are combined to produce an attenuation signal, the attenuation signal comprising an attenuation

element corresponding to each frequency bin. The input signal is attenuated using the attenuation signal.

The Examiner rejected claim 14 as anticipated by Fisher, stating "Claim 14 is essentially similar to Claim 1 and is rejected for the reasons state above apropos to Claim 1." Applicant disagrees with the Examiner regarding the scope of claim 14.

Claim 14 provides for determining a plurality of detection signals, each based on a sound element in the input signal, and combining the detection signals to produce an attenuation signal having an element corresponding to each frequency bin. The Examiner has identified no such attenuation signal in Fisher because Fisher does not disclose such an attenuation signal. Fisher discloses Shriek Present and Shriek Frequency signals for each Shriek Rejection Filter (310, 320). (*See*, Fisher, ¶ 91, quoted above.) Thus, Fisher neither teaches nor fairly suggests Applicant's claim 14.

Claim 14 is patentable over Fisher. Claims 15-24, which depend from claim 14, are therefore also patentable. Applicant notes that claim 17 appears to be improperly rejected under § 102(e) as the Examiner rejected claim 17 "for the reasons stated above apropos to Claim 6," and claim 6 is rejected under § 103(a).

Independent claim 25, as amended, provides a method of reducing acoustic shock. The spectrum of an input signal is obtained. A relative energy signal is determined as a function of frequency based on the spectrum. A difference signal is determined based on a change in magnitude in the spectrum as a function of frequency. A general tone signal is determined as a function of the relative energy signal and the difference signal. A fax/modem signal is determined as a function of the relative energy signal. A select tone signal is determined as a function of the relative energy signal. A single attenuation signal is determined as a function of frequency based on combining the general tone signal, the fax/modem signal and the select tone signal. A sound signal is attenuated based on the attenuation signal.

The Examiner rejected claim 25 as an obvious combination of Fisher and Soundshield, stating claim 25 "is essentially similar to Claims 1, 3, and 6. Applicant disagrees with the Examiner's characterization of claim 25.

With regard to the merits of the Examiner's rejection, Soundshield is a marketing article, providing no discussion on how to implement a system or method of shriek reduction, and therefore does not disclose determining a single attenuation signal based on combining a general tone signal, a fax/modem signal, and a select tone signal. Fisher does not disclose determining a single attenuation signal based on combining any signals, let alone Applicant's general tone signal, fax/modem signal, and select tone signal.

No combination of Fisher and Soundshield teaches or fairly suggests Applicant's claim 25. Claim 25 is patentable over Fisher and Soundshield. Claims 26-28, which depend from claim 25, are therefore also patentable.

Independent claim 29 provides a method of preventing acoustic shock. The presence of at least one general tone, at least one fax/modem tone, and a select tone are detected. A sound signal is attenuated if at least one of the general tone and the fax/modem tone is detected but only if the at least one select tone is not detected.

The Examiner rejected claim 29 as an obvious combination of Fisher and Soundshield, referring to the rejections for claims 1, 3, 6, and 8. Applicants disagree with the Examiner's characterization as to the scope of claim 29.

As to the substantive basis for the rejection, the Examiner makes no attempt to find any teaching of Applicant's attenuating a sound signal if at least one of the general tone and the fax/modem tone is detected but only if the at least one select tone is not detected as in claim 29. Neither Fisher nor Soundshield teach or fairly suggest such attenuation.

No combination of Fisher and Soundshield teaches or fairly suggests Applicant's claim 29. Claim 29 is patentable over Fisher and Soundshield.

Claim 18 has been amended to address a typographical error not previously noted by the Examiner or Applicant.

Claims 1-29, pending in this application, meet all substantive requirements for patentability. Applicant therefore respectfully requests that this case be passed to issuance. No fee is believed due by filing this paper. However, any fee due may be withdrawn from Deposit Account No. 02-3978 as specified in the application transmittal.

The Examiner is invited to contact the undersigned to discuss any aspect of this case.

Respectfully submitted,

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